

Copyright is owned by the Author of the thesis. Permission is given for a copy to be downloaded by an individual for the purpose of research and private study only. The thesis may not be reproduced elsewhere without the permission of the Author.

# **Factors Affecting Marketing Channel Choice Decisions in Citrus Supply Chain**

A thesis presented in partial fulfilment of the requirements for the degree of

Doctor of Philosophy  
in  
Agribusiness

at Massey University, Palmerston North, New Zealand.



**MASSEY  
UNIVERSITY**

**Muhammad Imran Siddique**

**2015**



## DECLARATION

I, Muhammad Imran Siddique, declare that this thesis entitled “*Factors Affecting Marketing Channel Choice Decisions in Citrus Supply Chain*” submitted to the Massey University for the degree of Doctor of Philosophy is the outcome of my own research work. Acknowledgement is given where material from other resources was used. I also certify that the thesis has not been presented, in whole or partly, for any degrees or diplomas.

Signed.....

Student ID: 07207093

**Full Name: Muhammad Imran Siddique**

## ABSTRACT

Fruits and vegetables are seasonal and perishable in nature and require efficient and effective marketing practices. Therefore, fruit and vegetable marketing channel choice decisions, being a part of efficient marketing practices, require more attention. In agribusiness, particularly for fruit and vegetables, the presence of a large number of intermediaries and the availability of different marketing channels make decision making more complex. The agricultural marketing system in Pakistan, particularly for fruit and vegetables, is very diverse. Nearly all citrus marketing channels are dominated by citrus growers, pre-harvest contractors and exporters of citrus fruit in the Pakistan's citrus supply chain. Along with price, a number of factors play a key role in the selection of a particular marketing channel for fruit and vegetables. This study aims to identify and evaluate the major factors affecting marketing channel choice decisions of citrus growers and pre-harvest contractors in Pakistan's citrus supply chain.

Using qualitative and quantitative techniques, this study took into account the various transaction costs, socioeconomic, demographic and psychological factors in citrus growers marketing channel choice selection and measured the actual impact of each factor on the overall decision. Along with citrus growers, factors affecting marketing channel choice decisions of pre-harvest contractors were also analysed using a multivariate technique of decision analysis i.e., conjoint analysis. Using a survey strategy and a convenient sampling technique, face to face interviews were conducted for the collection of data from citrus growers and contractors from Pakistan citrus supply chain.

It was concluded that all the three groups of citrus growers placed different preference and different utility values for the different factors when made selection out of the bundle of factors. Likewise, the percentage preference and utility values between any two factors is different for all the three groups of citrus growers, although, they had the same order of preferences for the same set of factors in order to make a certain marketing channel choice decision. The results also revealed that all the three groups of pre-harvest citrus contractors displayed diversity in preferences and different utility values for the different factors when made selection out of the bundle of factors in citrus marketing decision making. In addition, the percentage preference and utility values between any two factors is different for all the three groups of citrus pre-harvest

contractors. Contrary to the citrus growers, pre-harvest contractors placed different order of preference for the same set of factors in order to make a certain marketing channel choice decision. Apart from contributing into the body of literature on citrus industry of Pakistan this study also magnified the priority areas for future research and useful guidelines.

## ACKNOWLEDGEMENT

In the name of Almighty God, most Gracious, most Compassionate who granted me the opportunity and energy to complete this dissertation. Words cannot express how grateful I am to my supervisors Dr. Norman E. Marr and Dr. Elena Garnevska for their proper and timely guidance, encouragement, advice, and support in my academic as well as personal matters. I would also like to mention the contribution of my teacher and friend Senior Lecturer at Massey University, Daniel Conforte (*late*) who extended every support and encouragement to me when I desperately needed that.

I would like to acknowledge the financial contribution of Higher Education Commission (HEC) of Pakistan who awarded me PhD Scholarship to study at Massey University, New Zealand. I am also very grateful to Massey University for providing me the best resources, excellent working environment and IT support towards completion of my research. A special thanks to “The Claude McCarthy Fellowships” for providing me financial support to present my research work at University of Málaga, Spain.

I express my special appreciation and thanks to Nicola Shadbolt (Director, Fonterra and Chair in Farm Management, Massey University, New Zealand), Dr. David Gray (Senior Lecturer in Farm Management, Massey University, New Zealand) Dr. Phil Murray (Lecturer in Sustainable Energy, SEAT, Massey University, New Zealand), Dr. Abdul Ghafoor (Assistant Professor, University of Agriculture, Faisalabad, Pakistan) and my colleagues Insha Ullah and Muhammad Moazzam for their support.

I also acknowledge the contribution of the research participant’s from citrus industry and Government Departments of Pakistan who provided me the time and information that helped me to complete my studies.

I would like to express my special thanks to my parents, brothers and the only sister Sarah for all the support and sacrifices that you have made on my behalf. Without your support and prayers I would not be able to go so far. I would also express my appreciation to my beloved wife, Aima, who spent many sleepless nights with me just to make me realize that she is always with me.

Lastly, I would like to dedicate this dissertation to my ‘precious’ parents.

**Muhammad Imran Siddique**

## TABLE OF CONTENTS

<b>DECLARATION</b> .....	<i>i</i>
<b>ABSTRACT</b> .....	<i>ii</i>
<b>ACKNOWLEDGEMENT</b> .....	<i>iv</i>
<b>TABLE OF CONTENTS</b> .....	<i>v</i>
<b>LIST OF TABLES</b> .....	<i>x</i>
<b>LIST OF FIGURES</b> .....	<i>xiv</i>
<b>LIST OF ABBREVIATIONS</b> .....	<i>xv</i>
<b>1. INTRODUCTION</b> .....	<i>1</i>
1.1 Introduction.....	1
1.2 Importance of Agriculture Sector .....	1
1.3 Agricultural Marketing and Decision Making .....	3
1.4 Research Objectives.....	4
1.5 Thesis Format.....	5
<b>2. BACKGROUND</b> .....	<b>8</b>
2.1 Introduction.....	8
2.2 Citrus Fruit .....	8
2.3 History of Citrus Fruit.....	8
2.4 World Citrus Production .....	9
2.5 World Citrus Consumption .....	11
2.6 World Citrus Exports .....	15
2.7 Pakistan Citrus Industry .....	21
2.8 Citrus Production in Punjab .....	24
2.9 Citrus Harvest Season in Pakistan .....	25
2.10 Citrus Growers / Producers in Pakistan .....	26
2.11 Agricultural Marketing System in Pakistan .....	26
2.12 Citrus Marketing Channels in Pakistan.....	27
2.12.1 Contractors or Pre-harvest Contractors.....	28
2.12.2 Commission Agents .....	31
2.12.3 Wholesalers.....	31
2.12.4 Retailers .....	31
2.13 Pakistan Citrus Exports.....	34
2.14 Summary .....	35
<b>3. LITERATURE REVIEW</b> .....	<b>37</b>
3.1 Introduction.....	37
3.2 Decision Making Definitions .....	37



Types of Decisions .....	38
3.3 Decision Making Process .....	39
3.4 Decision Making Approaches .....	41
3.4.1 Normative Decision Making Theories.....	42
3.4.2 Descriptive Decision Making Theories or Behavioural Decision Theory.....	42
3.4.3 Prescriptive Decision Making Theories or Decision Analysis .....	43
3.5 History of Decision Making Theories .....	44
3.6 Decision Making in Agribusiness.....	51
3.6.1 Use of Decision Making Approaches in Agribusiness .....	52
3.6.2 Factors Affecting Decision Making in Agribusiness.....	56
3.7 Summary.....	67
<b>4. METHODOLOGY .....</b>	<b>69</b>
4.1 Introduction .....	69
4.2 Research Objectives .....	69
4.3 Research Paradigms.....	70
4.3.1 Quantitative Research Methods.....	73
4.3.2 Qualitative Research Methods.....	74
4.3.3 Research Criteria .....	77
4.3.4 Research Ethics.....	79
4.4 Research Design .....	80
4.4.1 Sampling.....	80
4.4.2 Data Collection.....	84
4.4.3 Data Analysis Technique.....	86
4.5 Methodology of This Study.....	91
4.6 Conjoint Analysis .....	94
4.6.1 Determination of Factors and Assigning Levels .....	95
4.6.2 Preference Model.....	96
4.6.3 Selection of Conjoint Methodology.....	98
4.6.4 Designing Combination of Factors (Stimulus).....	99
4.6.5 Data Collection in Conjoint Analysis .....	100
4.6.6 Selection of an Estimation Technique in Conjoint Analysis .....	103
4.6.7 Evaluating Model Goodness-of-Fit .....	104
4.7 Questionnaire Design and Pilot Study.....	104
4.8 Summary.....	105
<b>5. PILOT STUDY .....</b>	<b>106</b>
5.1 Introduction .....	106

5.2	Visits to Public and Private Institutes .....	106
5.2.1	University of Agriculture, Faisalabad.....	107
5.2.2	Punjab Agriculture Department, Lahore .....	107
5.3	Citrus (Kinnow) Supply Chain Systems .....	109
5.3.1	Unprocessed Citrus (Kinnow) Supply Chain for Local Market.....	109
5.3.2	Processed Citrus (Kinnow) Supply Chain for Export.....	118
5.3.3	Processed Citrus (Kinnow) Supply Chain for Juice Extraction .....	120
5.4	Pilot Study and Conjoint Analysis Framework.....	120
5.4.1	Profiles .....	121
5.5	Difficulties and Complications Faced in Pilot Data Collection .....	127
5.6	Limitation of the Research.....	127
<b>6.</b>	<b>RESULTS AND DISCUSSION-CITRUS GROWERS .....</b>	<b>129</b>
6.1	Introduction.....	129
6.2	Analysis of the Data.....	129
6.3	Citrus Growers.....	130
6.3.1	Small Size Growers.....	130
6.3.2	Medium Size Growers .....	168
6.3.3	Large Size Growers.....	193
6.4	Comparison of All the Three Groups of Citrus Growers.....	209
<b>7.</b>	<b>RESULTS AND DISCUSSION-CITRUS PRE-HARVEST CONTRACTORS .....</b>	<b>213</b>
7.1	Introduction.....	213
7.2	Analysis of the Data.....	213
7.3	Citrus Pre-harvest Contractors.....	214
7.3.1	Small Size Pre-harvest Contractors.....	214
7.3.2	Medium Size Pre-harvest Contractors .....	235
7.3.3	Large Size Pre-harvest Contractors.....	256
7.4	Comparison of All the Three Groups of Citrus Pre-harvest Contractors.....	285
<b>8.</b>	<b>CONCLUSION.....</b>	<b>289</b>
8.1	Introduction.....	289
8.2	Research Objectives.....	289
8.3	Relating Results with Objectives .....	289
8.4	Contributions of the Research Study .....	294
8.5	Limitations of the Research Study .....	297
8.6	Future Research .....	298
	<b>REFERENCES .....</b>	<b>299</b>
	<b>APPENDICES .....</b>	<b>316</b>

Appendix A	Export of Citrus Fruit From Pakistan (Country-Wise) .....	316
Appendix B	Research Ethics Approval.....	318
Appendix C-1	Citrus Grower/Producer Questionnaire for Pilot Test .....	319
Appendix C-2	Pre-harvest Citrus Contractor Questionnaire for Pilot Test.....	320
Appendix D-1	Citrus Growers Profiles .....	321
Appendix D-2	Citrus Growers Profiles (In Local Language).....	348
Appendix E-1	Pre-harvest Citrus Contractors Profiles .....	375
Appendix E-2	Pre-harvest Citrus Contractors Profiles (In Local Language).....	391
Appendix F-1	Significance Test Results between Qualitative and Quantitative Factors for Small Size Citrus Growers.....	407
Appendix F-2	Significance Test Results between Two Quantitative Factors for Small Size Citrus Growers.....	409
Appendix F-3	Relation between Education of the Respondents and Price for Small Size Citrus Growers.....	410
Appendix F-4	Relation between Experience of the Respondents and Price for Small Size Citrus Growers.....	410
Appendix F-5	Relation between Area under Citrus and Price for Small Size Citrus Growers .....	411
Appendix F-6	All Profiles/Decisions for Small Size Citrus Growers.....	412
Appendix F-7	Predicted Rankings of all Profiles/Decisions for Small Size Citrus Growers ..	414
Appendix G-1	Significance Test Results between Qualitative and Quantitative Factors for Medium Size Citrus Growers.....	415
Appendix G-2	Significance Test Results between Two Quantitative Factors for Medium Size Citrus Growers .....	417
Appendix G-3	Relation between Education of the Respondents and Price for Medium Size Citrus Growers.....	418
Appendix G-4	Relation between Experience of the Respondents and Price for Medium Size Citrus Growers.....	418
Appendix G-5	Relation between Area under Citrus and Price for Medium Size Citrus Growers.....	419
Appendix G-6	All Profiles/Decisions for Medium Size Citrus Growers .....	420
Appendix G-7	Predicted Rankings of all Profiles/Decisions for Medium Size Citrus Growers .....	422
Appendix H-1	Significance Test Results between Qualitative and Quantitative Factors for Large Size Citrus Growers.....	423
Appendix H-2	Significance Test Results between Two Quantitative Factors for Large Size Citrus Growers.....	424
Appendix H-3	Relation between Education of the Respondents and Price for Large Size Citrus Growers.....	425

Appendix H-4	Relation between Experience of the Respondents and Price for Large Size Citrus Growers .....	425
Appendix H-5	Relation between Area under Citrus and Price for Large Size Citrus Growers .....	426
Appendix H-6	All Profiles/Decisions for Large Size Citrus Growers .....	427
Appendix H-7	Predicted Rankings of all Profiles/Decisions for Large Size Citrus Growers.. ..	429
Appendix I-1	Significance Test Results between Qualitative and Quantitative Factors for Small Size Pre-Harvest Contractors .....	430
Appendix I-2	Significance Test Results between Two Quantitative Factors for Small Size Pre-Harvest Contractors .....	431
Appendix I-3	Relation between Education of the Respondents and Price for Small Size Pre-Harvest Contractors .....	432
Appendix I-4	Relation between Experience of the Respondents and Price for Small Size Pre-Harvest Contractors .....	432
Appendix I-5	All Profiles/Decisions for Small Size Pre-harvest Citrus Contractors .....	433
Appendix I-6	Predicted Rankings of all Profiles/Decisions for Small Size Pre-harvest Citrus Contractors .....	434
Appendix J-1	Significance of Qualitative & Quantitative Variables for Medium Size Pre-harvest Contractors.....	435
Appendix J-2	Significance Test Results between Two Quantitative Factors for Medium Size Pre-harvest Contractors .....	436
Appendix J-3	Relation between Education of the Respondents and Price for Medium Size Pre-harvest Contractors .....	437
Appendix J-4	Relation between Experience of the Respondents and Price for Medium Size Pre-harvest Contractors .....	437
Appendix J-5	All Profiles/Decisions for Medium Size Citrus Pre-harvest Contractors...	438
Appendix J-6	Predicted Rankings of all Profiles/Decisions for Medium Size Citrus Pre-harvest Contractors.....	439
Appendix K-1	Significance of Qualitative & Quantitative Variables for Large size Pre-harvest Contractors.....	440
Appendix K-2	Significance Test Results between Two Quantitative Factors for Large size Pre-harvest Contractors .....	441
Appendix K-3	Relation between Education of the Respondents and Price for Large size Pre-harvest Contractors.....	442
Appendix K-4	Relation between Experience of the Respondents and Price for Large size Pre-harvest Contractors .....	442
Appendix K-5	All Profiles/Decisions for Large size Pre-harvest Contractors .....	443
Appendix K-6	Predicted Rankings of all Profiles/Decisions for Large size Pre-harvest Contractors .....	444

## LIST OF TABLES

Table 2.1	World Leading Citrus Producing Countries .....	10
Table 2.2	Citrus Fruit Consumption in Major Citrus Producing Countries.....	12
Table 2.3	World Leading Citrus Exporting Countries Value .....	15
Table 2.4	World Citrus Exports.....	16
Table 2.5	World Leading Citrus Exporting Countries.....	17
Table 2.6	Citrus Production and Exports from Spain .....	18
Table 2.7	Citrus Production and Exports from United States of America.....	18
Table 2.8	Asian Leading Citrus Exporting Countries.....	20
Table 2.9	Citrus Production and Exports from China .....	20
Table 2.10	World Leading Citrus Importing Countries.....	21
Table 2.11	Area and Production of all Fruit in Pakistan .....	22
Table 2.12	Major Citrus Growing Areas in Pakistan.....	23
Table 2.13	Varieties of Citrus Fruit in Pakistan .....	24
Table 2.14	Province-wise Production of Citrus Fruit in Pakistan .....	24
Table 2.15	Production of Different Types of Citrus Fruit in Punjab .....	25
Table 2.16	Harvest Calendar for Major Citrus Fruit Producing Countries.....	26
Table 2.17	Pakistan Citrus Area, Production and Exports .....	34
Table 3.1	A Brief Summary of Normative and Descriptive Decision Theories .....	46
Table 4.1	Comparison of Research Paradigms .....	72
Table 4.2	Qualitative and Quantitative Research .....	77
Table 4.3	Summary of Validity Estimation Methods .....	78
Table 4.4	Summary of Reliability Estimation Methods .....	79
Table 4.5	A comparison of Conjoint Methodologies .....	98
Table 5.1	Growers General Information.....	111
Table 5.2	Growers Marketing Channel Choices and Terms of Contract.....	112
Table 5.3	Proportion and Reason to Change Buyer.....	114
Table 5.4	List of Factors affecting Citrus Growers Marketing Decisions Making.....	115
Table 5.5	Citrus Pre-harvest Contractors General Information .....	116
Table 5.6	Citrus Pre-harvest Contractors Marketing Channel Choices and Terms of Contract .....	117
Table 5.7	Proportion and Reason to Change Buyer.....	117
Table 5.8	List of Factors affecting Citrus Pre-harvest Contractor Marketing Channel Decisions .....	118
Table 5.9	Group of Factors Affecting Citrus Growers Decision Making.....	123
Table 5.10	Percentage Preference of Different Factors – Citrus Growers .....	124
Table 5.11	Percentage Preference of Different Factors – Citrus Contractors.....	126
Table 6.1	Part-worth Utility Ranges .....	130
Table 6.2	Overall Percentage Importance of Factors .....	131
Table 6.3	Time of Complete Fruit Picking and Delay in Payment.....	141
Table 6.4	Delay in Payment and Number of Fruit Pickings .....	142
Table 6.5	Certainty of Payment and Number of Fruit Pickings .....	143
Table 6.6	Mode of Payment and Number of Fruit Picking .....	144
Table 6.7	Number of Fruit Picking and Harvesting Fruit Loss .....	145
Table 6.8	Citrus Grower's Experience and Number of Fruit Picking .....	145
Table 6.9	Advance Payment and Mode of Payment.....	146
Table 6.10	Mode of Payment and Delay in Payment .....	147

Table 6.11	Certainty of Payment and Mode of Payment .....	148
Table 6.12	Urgent Need of Money and Mode of Payment .....	148
Table 6.13	Harvesting Fruit Loss and Mode of Payment .....	149
Table 6.14	Advance Payment and Certainty of Payment.....	150
Table 6.15	Advance Payment and Harvesting Fruit Loss.....	151
Table 6.16	Urgent Need of Money and Delay in Payment .....	151
Table 6.17	Certainty of Payment and Delay in Payment .....	152
Table 6.18	Delay in Payment and Harvesting Fruit Loss .....	153
Table 6.19	Education of the Respondents and Delay in Payment.....	154
Table 6.20	Area under Citrus and Delay in Payment.....	154
Table 6.21	Harvesting Fruit Loss and Certainty of Payment.....	155
Table 6.22	Citrus Grower's Experience (Years) and Certainty of Payment.....	156
Table 6.23	Area under Citrus and Certainty of Payment .....	157
Table 6.24	Age of Respondents and Harvesting Fruit Loss.....	158
Table 6.25	Education of Respondents and Harvesting Fruit Loss .....	158
Table 6.26	Experience of Respondents and Harvesting Fruit Loss .....	159
Table 6.27	Area of Respondents and Harvesting Fruit Loss.....	160
Table 6.28	Education of the Respondents and Urgent Need of Money .....	160
Table 6.29	Accumulated Percentages of All Factors .....	162
Table 6.30	Part-worth Utility Estimates of Factors.....	164
Table 6.31	Correlations between Observed and Estimated Preferences .....	167
Table 6.32	Part-worth Utility Ranges for Medium Size Citrus Growers.....	168
Table 6.33	Overall Percentage Importance of Factors .....	169
Table 6.34	Time of Complete Fruit Picking and Advance Payment.....	177
Table 6.35	Time of Complete Fruit Picking and Delay in Payment .....	178
Table 6.36	Advance Payment and Mode of Payment .....	179
Table 6.37	Advance Payment and Certainty of Payment.....	180
Table 6.38	Advance Payment and Delay in Payment .....	181
Table 6.39	Advance Payment and Harvesting Fruit Loss.....	182
Table 6.40	Education of the Respondents and Advance Payment.....	183
Table 6.41	Delay in Payment and Harvesting Fruit Loss .....	183
Table 6.42	Urgent Need of Money and Certainty of Payment.....	184
Table 6.43	Harvesting Fruit Loss and Certainty of Payment.....	185
Table 6.44	Harvesting Fruit Loss and Urgent Need of Money .....	185
Table 6.45	Citrus Grower's Experience and Harvesting Fruit Loss.....	186
Table 6.46	Accumulated Percentages of All Factors .....	187
Table 6.47	Part-worth Utility Estimates of Factors.....	189
Table 6.48	Correlations between Observed and Estimated Preferences .....	192
Table 6.49	Part-worth Utility Ranges for Large Size Citrus Growers .....	193
Table 6.50	Overall Percentage Importance of Factors .....	194
Table 6.51	Advance Payment and Delay in Payment .....	202
Table 6.52	Delay in Payment and Harvesting Fruit Loss .....	202
Table 6.53	Accumulated Percentages of All Factors .....	205
Table 6.54	Part-worth Utility Estimates of Factors.....	207
Table 6.55	Correlations between Observed and Estimated Preferences .....	209
Table 6.56	Factors Preferences for All the Three Groups of Citrus Growers.....	211
Table 6.57	Highest Utility Value Decisions .....	212
Table 7.1	Part-worth Utility Ranges .....	214

Table 7.2	Overall Percentage Importance of Factors .....	215
Table 7.3	Advance Payment and Mode of Payment.....	223
Table 7.4	Urgent Need of Money and Mode of Payment.....	223
Table 7.5	Experience of the Respondents and Mode of Payment .....	224
Table 7.6	Citrus Contractor’s Experience and Bargaining Power.....	225
Table 7.7	Citrus Contractors Experience and Delay in Payment.....	226
Table 7.8	Age of the Respondents and Certainty of Payment .....	227
Table 7.9	Experience of the Respondents and Urgent Need of Money .....	228
Table 7.10	Accumulated Percentages of All Factors.....	230
Table 7.11	Part-worth Utility Estimates of Factors .....	231
Table 7.12	Correlations between Observed and Estimated Preferences.....	234
Table 7.13	Part-worth Utility Ranges .....	235
Table 7.14	Overall Percentage Importance of Factors .....	236
Table 7.15	Advance Payment and Mode of Payment.....	243
Table 7.16	Advance Payment and Bargaining Power .....	244
Table 7.17	Age of the Respondents and Delay in Payment.....	245
Table 7.18	Citrus Contractors Experience and Delay in Payment.....	245
Table 7.19	Reliability and Urgent Need of Money .....	246
Table 7.20	Education of the Respondents and Reliability.....	247
Table 7.21	Education of the Respondents and Urgent Need of Money.....	248
Table 7.22	Age of the Respondents and Certainty of Payment .....	249
Table 7.23	Education of the Respondents and Bargaining Power.....	249
Table 7.24	Accumulated Percentages of All Factors.....	251
Table 7.25	Part-worth Utility Estimates of Factors .....	253
Table 7.26	Correlations between Observed and Estimated Preferences.....	256
Table 7.27	Part-worth Utility Ranges .....	256
Table 7.28	Overall Percentage Importance of Factors .....	257
Table 7.29	Mode of Payment and Advance Payment.....	264
Table 7.30	Mode of Payment and Certainty of Payment.....	265
Table 7.31	Mode of Payment and Delay in Payment .....	266
Table 7.32	Mode of Payment and Bargaining Power .....	267
Table 7.33	Mode of Payment and Reliability .....	267
Table 7.34	Age of the respondents and Mode of Payment.....	268
Table 7.35	Education of the respondents and Mode of Payment .....	269
Table 7.36	Experience of the respondents and Mode of Payment.....	270
Table 7.37	Experience of the Respondents and Selective Fruit Purchase .....	271
Table 7.38	Advance Payment and Delay in Payment.....	272
Table 7.39	Advance Payment and Reliability .....	272
Table 7.40	Experience of the Respondents and Advance Payment.....	273
Table 7.41	Certainty of Payment and Bargaining Power .....	274
Table 7.42	Reliability and Selective Fruit Purchase.....	274
Table 7.43	Age of the Respondents and Reliability .....	275
Table 7.44	Experience of the Respondents and Reliability .....	275
Table 7.45	Urgent Need of Money and Delay in Payment.....	276
Table 7.46	Experience of the Respondents and Urgent Need of Money .....	277
Table 7.47	Delay in Payment and Bargaining Power.....	277
Table 7.48	Delay in Payment and Selective Fruit Purchase .....	278
Table 7.49	Accumulated Percentages of All Factors.....	280

Table 7.50	Part-worth Utility Estimates of Factors.....	282
Table 7.51	Correlations between Observed and Estimated Preferences .....	284
Table 7.52	Factors Preferences for All the Three Groups of Citrus Contractors.....	286
Table 7.53	Highest Utility Value Decisions .....	288



## LIST OF FIGURES

Figure 1.1	Pakistan Agriculture Growth Rate .....	2
Figure 1.2	Format of the Thesis .....	6
Figure 2.1	World Citrus and Oranges Production ('000' tonnes) .....	9
Figure 2.2	World Citrus Fruit Consumption Trend.....	13
Figure 2.3	Citrus Fruit Consumption Trend in Asia.....	14
Figure 2.4	Asia Citrus Exports ('000' tonnes) .....	19
Figure 2.5	Marketing Channels of Citrus in Pakistan .....	27
Figure 2.6	Flow Diagram of Marketing Channels of Citrus (Kinnow in Pakistan) .....	29
Figure 2.7	Finances Flow Diagram in Marketing Channels of Citrus (Kinnow in Pakistan) ..	32
Figure 2.8	Possession Flow Diagram in Marketing Channels of Citrus (Kinnow in Pakistan)	33
Figure 3.1	Simon's Model of the Decision Process .....	39
Figure 3.2	A Multi-Objective Decision Making Process .....	40
Figure 3.3	Fishbein & Ajzen Model of Decision Making .....	50
Figure 4.1	Sampling Techniques .....	82
Figure 4.2	Types of Questionnaires.....	84
Figure 4.3	Types of Secondary Data .....	85
Figure 4.4	Methodological Framework.....	92
Figure 4.5	Part-worth Model .....	97
Figure 5.1	Unprocessed Citrus (Kinnow) Supply Chain for Local Market.....	110
Figure 5.2	Processed Citrus (Kinnow) Supply Chain for Export .....	119
Figure 5.3	Processed Citrus (Kinnow) Supply Chain for Juice Extraction .....	120
Figure 5.4	Citrus Growers Profiles.....	121
Figure 5.5	Three Profile Based on Important Factors for Citrus Growers .....	125
Figure 5.6	Three Profile Based on Important Factors for Pre-harvest Contractors.....	126
Figure 6.1	Relationship between Age of the Respondents and Price .....	140
Figure 6.2	Factors Averaged Importance Values .....	161
Figure 6.3	Relationship between Age of the Respondents and Price .....	176
Figure 6.4	Factors Averaged Importance Values .....	187
Figure 6.5	Relationship between Age of the Respondents and Price .....	201
Figure 6.6	Factors Averaged Importance Values .....	204
Figure 6.7	Percentage Preference of All the Three Groups of Citrus Growers .....	210
Figure 7.1	Relationship between Age of the Respondents and Price .....	222
Figure 7.2	Factors Averaged Importance Values .....	228
Figure 7.3	Relationship between Age of the Respondents and Price .....	242
Figure 7.4	Factors Averaged Importance Values .....	250
Figure 7.5	Relationship between Age of the Respondents and Price .....	263
Figure 7.6	Factors Averaged Importance Values .....	279
Figure 7.7	Percentage Preference of All the Three Groups of Citrus Contractors .....	285

## LIST OF ABBREVIATIONS

GDP	Gross Domestic Product
SPS	Sanitary and Phytosanitary Measures
WTO	World Trade Organization
PHDECo.	Pakistan Horticulture Development and Export Company
PKR	Pakistan Rupee
EUT	Expected Utility Theory
SEUT	Subjective Expected Utility Theory
OLS	Ordinary Least Square
SPSS	Statistical Product and Service Solutions
PASW	Predictive Analytics Software
AMIS	Agricultural Marketing Information System